

REMARKS

Claim 1 is proposed to be amended herein to correct a minor typographical error. No new matter has been added.

The Final Office Action mailed May 27, 2004, has been received and reviewed. Claims 1-8, 10-14, 16-25, 68, and 69 are currently pending in the application. Claims 11-14, 20, 21, 23-25, 68, and 69 are withdrawn from consideration as being directed to a non-elected invention. Claims 1-8, 10, 16-19, and 22 stand rejected.

Applicant proposes to amend claim 1 and respectfully requests reconsideration of the application in light of the arguments presented herein.

Information Disclosure Statement(s)

Applicant notes the filing of three Information Disclosure Statements on December 1, 2003, March 1, 2004, and March 4, 2004, respectively, and notes that copies of the PTO-1449s were not returned with the outstanding Office Action. Applicant respectfully requests that the information cited on the PTO-1449s be made of record herein and that initialed copies of the PTO-1449s be returned to Applicants' undersigned attorney.

Finality of the Office Action

Applicant respectfully submits that the finality of the outstanding Office Action is improper and should be withdrawn because the claims are rejected under newly cited art. In the outstanding Office Action, the Examiner relies on U.S. Patent No. 4,128,443 to Pawlak *et al.* ("Pawlak") to reject the pending claims. However, Pawlak was only made of record in the PTO-892 mailed with the outstanding Office Action. While it appears that the Examiner may have intended to include this PTO-892 with the Office Action of December 9, 2003, the PTO-892 was not included, as noted in Applicant's amendment filed on March 1, 2004. The Office Action of December 9, 2003, also did not include rejections of the pending claims in light of Pawlak and, therefore, Applicant was not apprised of the Examiner's intent to rely on Pawlak to reject the

pending claims. As such, this response to the outstanding Office Action is the Applicant's first opportunity to respond to the Examiner's rejections in light of Pawlak.

The Examiner also states that the Applicant's previous amendments necessitated the new grounds of rejection. However, in the amendment filed on March 1, 2004, claims 1 and 22 were amended to recite subject matter that was already present in the pending claims. Claims 6 and 7 were amended to improve antecedent basis. As such, Applicant respectfully submits that the amendments did not necessitate the new grounds of rejection.

35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on Pawlak in view of U.S. Patent No. 5,569,875 to Fey

Claims 1-8 and 22 are rejected under 35 U.S.C. § 103(a) ("Section 103") as being unpatentable over Pawlak in view of U.S. Patent No. 5,569,875 to Fey ("Fey"). Applicant respectfully traverses this rejection, as hereinafter set forth.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103 rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The obviousness rejection of claims 1-8 and 22 is improper because the cited references do not teach or suggest all of the claim limitations and do not provide a motivation to combine to produce the claimed invention.

Pawlak teaches a gas producing deflagrating composition that provides propulsion to projectiles. Column 2, lines 16-21. The composition includes a substantially homogenous mixture of 30-82.5 parts by weight of an oxygen-containing oxidizing agent, 14.5-45 parts by

weight of a carboxylic acid or oxidizable derivative, and 1.0-25.0 parts by weight of water. Column 2, lines 30-38. Pawlak teaches that water is essential in its composition to control a burning rate of the composition, to act as a coolant, and to provide water vapor. Column 5, lines 36-39 and 52-63.

Fey teaches an explosive composition that includes an inorganic oxidizing agent and a fuel that is formed as a reaction product of a transition metal or transition metal compound and an organic acid, such as ascorbic acid or erythorbic acid. Column 3, lines 7-11. The transition metal or transition metal compound is iron, iron hydroxide, or iron oxide. *Id.* at lines 13-18. The inorganic oxidizing agent is a nitrate-containing inorganic oxidizer. *Id.* at lines 29-32. The inorganic oxidizing agent and the fuel are present in the explosive composition as highly polished granules. Column 5, lines 18-33. Fey teaches that it is undesirable for explosive compositions to be hygroscopic because the water negatively affects performance and product life. Column 1, lines 39-41. Fey also teaches that the reduced hygroscopicity of its explosive composition is due to the highly polished granules of the inorganic oxidizing agent and the fuel. Column 5, lines 30-33.

As proposed to be amended, claim 1 recites a solid pyrotechnic composition having a total weight. The solid pyrotechnic composition comprises about 40 weight percent to about 90 weight percent oxidizer particles. The oxidizer particles have a mean particle size of not greater than about 30 microns and comprise at least one of an alkali metal nitrate and ammonium nitrate and at least one of an alkali metal perchlorate and ammonium perchlorate. The solid pyrotechnic composition also comprises organic crystalline particles that account for about 10 weight percent to about 60 weight percent of the total weight of the solid pyrotechnic composition. The organic crystalline particles comprise at least one of phenolphthalein, an organic crystalline compound derived from a reaction between a phenolic compound and phthalic anhydride, fluorescein, 1,5-naphthalenediol, anthraflavic acid, and terephthalic acid. The solid pyrotechnic composition is free of sulfur.

The cited references do not teach or suggest all the limitations of claim 1 because they do not teach or suggest the limitation of "organic crystalline particles accounting for about 10

weight percent to about 60 weight percent of the total weight of the solid pyrotechnic composition.” While Pawlak teaches using a carboxylic acid or oxidizable derivative in its composition, Pawlak is silent about the form of the carboxylic acid or oxidizable derivative. Specifically, Pawlak does not teach or suggest that the carboxylic acid or oxidizable derivative is present in the composition as crystalline particles. Fey also does not teach or suggest using organic crystalline particles in its explosive composition. Rather, Fey teaches that the fuel is ground to a fine powder and “has the consistency of talc without any crystals or particulate matter present.” Column 7, lines 52-60.

The cited references also do not provide a motivation to combine to produce the claimed invention. To provide a motivation or suggestion to combine, the prior art or the knowledge of a person of ordinary skill in the art must “suggest the desirability of the combination” or provide “an objective reason to combine the teachings of the references.” M.P.E.P. § 2143.01. The Examiner acknowledges that Pawlak does not teach using “a mixture of oxidizers with amounts or a particular particle size of the oxidizers” and relies on Fey as teaching this limitation. Office Action of May 27, 2004, p. 3. The Examiner states that “[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to use a mixture of oxidizers as taught by Fey since Fey suggests that it is known to use a mixture of oxidizers with a certain particle size in a similar composition to that disclosed by Pawlak that is a substitute for black powder.” *Id.*

However, the Examiner’s proposed motivation to combine is not an objective reason that supports combination of the cited references because nothing in the cited references, when combined, suggests the desirability of the combination or provides an objective reason to combine. Rather, the Examiner’s proposed motivation is conclusory and is not based on objective evidence of record. Nothing in Pawlak suggests the desirability of using a mixture of oxidizers or provides any teaching or suggestion for the amount of the oxidizer or a particular particle size of the oxidizer to be used in the composition. In addition, nothing in Fey suggests the desirability of using mixtures of oxidizers or oxidizers having an average particle size of 15 μm in other explosive composition, such as in the composition of Pawlak.

It is also improper to combine references where the references teach away from combination. M.P.E.P. § 2145. The cited references teach away from combination because Pawlak teaches using water in its composition while Fey teaches that the presence of water reduces performance of explosive compositions. Pawlak teaches that water is essential in its composition to control the burning rate of the composition, to act as a coolant, and to provide water vapor. Column 5, lines 36-39 and 52-63. Pawlak also teaches that this feature of its composition is different from the prior art, which teaches that water is deleterious. *Id.* at lines 39-41. In contrast, Fey teaches that if an explosive composition, such as black powder, is hygroscopic, its performance, storage, and handling properties are affected. Column 1, lines 39-41. As such, if the explosive composition includes water, its performance will be negatively affected. Fey also teaches that its composition is less hygroscopic than black powder due to the highly polished granules of the inorganic oxidizing agent and the fuel. Column 5, lines 30-33. Therefore, after reading the cited references, one of ordinary skill in the art would not be motivated to combine Pawlak and Fey to produce the claimed invention because Pawlak and Fey teach contrasting effects of water on the performance of the explosive composition.

Furthermore, even if Pawlak and Fey were combined, the claimed invention would not be produced because the resulting composition would not include organic crystalline particles.

Since the cited references do not teach or suggest all the claim limitations and do not provide a motivation to combine, the obviousness rejection of claim 1 is improper and should be withdrawn.

Claims 2-8 and 22 are allowable, *inter alia*, as depending from an allowable base claim.

Claim 5 is further allowable because the cited references do not teach or suggest that the oxidizer particles constitute 65 weight percent to 80 weight percent of the solid pyrotechnic composition.

Claims 6 and 7 are further allowable because the cited references do not teach or suggest that 0.5 weight percent to 30 weight percent of the total weight of the solid pyrotechnic composition consists of the at least one of an alkali metal perchlorate and ammonium perchlorate or that 5 weight percent to 20 weight percent of the total weight of the solid pyrotechnic

composition consists of the at least one of an alkali metal perchlorate and ammonium perchlorate.

Claim 8 is further allowable because the cited references do not teach or suggest that 5 weight percent to 20 weight percent of the total weight of the solid pyrotechnic composition consists of potassium perchlorate.

Claim 22 is further allowable because the cited references do not teach or suggest that the solid pyrotechnic composition is free of charcoal.

Obviousness Rejection Based on Pawlak in view of Fey as applied to claims 1-8 and 22 above, and further in view of H72 to Wise et al.

Claim 10 is rejected under Section 103 as being unpatentable over Pawlak in view of Fey as applied to claims 1-8 and 22 above, and further in view of H72 to Wise et al. (“Wise”). Applicant respectfully traverses this rejection, as hereinafter set forth.

The teachings of Pawlak and Fey are as previously summarized.

Wise teaches a pyrotechnic composition having potassium nitrate, sulfur, and an organic crystalline compound as a fuel. Column 2, lines 10-44. The organic crystalline compound is fluorescein, phenolphthalein, 1,5-naphthalenediol, phenolphthalein, anthraflavic acid, or terephthalic acid. *Id.* at lines 10-44.

Claim 10 depends on claim 1 and, therefore, is allowable, *inter alia*, as depending from an allowable base claim.

Claim 10 is also allowable because the cited references do not provide a motivation to combine to produce the claimed invention. As acknowledged by the Examiner, Pawlak and Fey do not teach or suggest using phenolphthalein. Office Action of May 27, 2004, p. 4. Therefore, the Examiner relies on Wise as teaching this limitation. *Id.* The Examiner states that “[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to use the phenolphthalein as the organic compound with the compositions disclosed and taught by Pawlak and Fey since Wise suggests that it is known organic compound to be used as a fuel.” *Id.* However, the Examiner’s proposed motivation is not an objective reason that supports

combination of Pawlak, Fey, and Wise because nothing in the cited references, when combined, suggests the desirability of the combination or provides an objective reason to combine. Rather, the Examiner's proposed motivation is conclusory and is not based on objective evidence of record. Nothing in Pawlak or Fey suggests the desirability of using phenolphthalein as a fuel, as acknowledged by the Examiner. In addition, Wise does not provide any suggestion to use phenolphthalein in other explosive compositions, such as in the composition of Pawlak.

Since the cited references do not provide a motivation to combine, the obviousness rejection of claim 10 is improper and should be withdrawn.

Obviousness Rejection Based on Pawlak in view of Fey as applied to claims 1-8 and 22 above, and further in view of U.S. Patent No. 5,320,691 to Weber

Claims 16-19 are rejected under Section 103 as being unpatentable over Pawlak in view of Fey as applied to claims 1-8 and 22 above, and further in view of U.S. Patent No. 5,320,691 to Weber ("Weber"). Applicant respectfully traverses this rejection, as hereinafter set forth.

The teachings of Pawlak and Fey are as previously summarized.

Weber teaches an energetic composition having phenolphthalein, potassium nitrate, and sulfur. Column 1, lines 38-43. The energetic composition also includes a vinyl acetate polymer. Column 3, lines 53-57.

Claim 16 depends on claim 1 and, therefore, is allowable, *inter alia*, as depending from an allowable base claim. Claims 17-19 depend on claim 16 and, therefore, are allowable, *inter alia*, as depending from an allowable base claim.

Claims 16-19 are also allowable because the cited references do not provide a motivation to combine to produce the claimed invention. As acknowledged by the Examiner, Pawlak does not teach or suggest that its composition includes a nonhygroscopic polymeric binder. Office Action of May 27, 2004, p. 4. Therefore, the Examiner relies on Weber as teaching this limitation. The Examiner states that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to use the binder as taught by Weber with the composition of Pawlak, since Weber teaches that it is a known binder to be used in a

composition that is a substitute for black powder and because Pawlak discloses that binders can be used.” *Id.* at p. 5. However, the Examiner’s proposed motivation to combine is conclusory and is not based on objective evidence of record. While Pawlak teaches that a binder is used in its composition, Pawlak does not teach using a nonhygroscopic binder. Furthermore, since Pawlak teaches that water is essential in its composition, it is unlikely that the binder used in its composition is nonhygroscopic. In addition, nothing in Pawlak, Fey, or Weber, when combined, suggests the desirability of the combination or provides an objective reason to combine. Nothing in Pawlak or Fey suggests the desirability of using a nonhygroscopic polymeric binder. Weber also does not suggest the desirability of using a nonhygroscopic polymeric binder in other explosive compositions.

Claims 17 and 18 are further allowable because the cited references do not teach or suggest that the nonhygroscopic polymeric binder constitutes no more than about 10 weight percent, such as from 3 weight percent to 6 weight percent, of the solid pyrotechnic composition.

Since the cited references do not provide a motivation to combine, the obviousness rejection of claims 16-19 are improper and should be withdrawn.

ENTRY OF AMENDMENTS

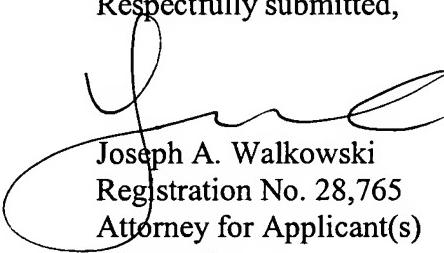
The proposed amendment to claim 1 above should be entered by the Examiner because the amendment is supported by the as-filed specification and drawings and does not add new matter to the application. Further, the amendment does not raise new issues or require a further search. Finally, if the Examiner determines that the amendment does not place the application in condition for allowance, entry is respectfully requested upon filing of a Notice of Appeal herein.

Applicant considers claim 1 to be generic and notes that upon allowance of a generic claim, claims depending therefrom in a non-elected species would also be allowable. As such, claims 11-14, 20, 21, 23-25, 68, and 69 would be allowable as depending from claim 1.

CONCLUSION

Claims 1-8, 10-14, 16-25, 68, and 69 are believed to be in condition for allowance, and an early notice thereof is respectfully solicited. Should the Examiner determine that additional issues remain which might be resolved by a telephone conference, she is respectfully invited to contact Applicant's undersigned attorney.

Respectfully submitted,



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